APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/002,476	10/23/2001	Richard John Blasiak	RAL920010024US1	5300

			EXAMINER
45211 7590 07/22/2005			MERED, HABTE

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ART UNIT	PAPER NUMBER
2662	

DATE MAILED: 07/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)	
Office Action Summary	10/002,476	BLASIAK ET AL.	
	Examiner	Art Unit	
	Habte Mered	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-54* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-54* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

        1.☐ Certified copies of the priority documents have been received.

        2.☐ Certified copies of the priority documents have been received in Application No. _____.

        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date <u>10/23/2001</u>.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Specification

1.   The disclosure is objected to because of the following informalities:

The label 100 quoted on Page 10, Line 20 and Page 11, Line 6 is missing in

Figure 1. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3.   **Claims 1, 15, 29, and 43** are rejected under 35 U.S.C. 102(b) as being

anticipated by Gopal et al (Multicasting to Multiple Groups Over Broadcast Channels,

IEEE, July 1994, Pages 2423-2431), hereinafter referred to as Gopal.

Gopal discloses various methods in which the source multicasts to a number of

different (and not necessarily disjoint) destination groups.

Gopal discloses a method for reliably transmitting a frame comprising the steps

of: inserting two or more sequence numbers in the frame, wherein each of the two or

more sequence numbers is associated with a destination node; and transmitting the

frame to two or more destination nodes. **(See Page 2423, 2nd Column, last two lines**

and Page 2424, 1st Column, Lines 1-4)

Claim Rejections - 35 USC § 103

4.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

5.   **Claims 2, 16, 30 and 44** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Gopal et al (Multicasting to Multiple Groups Over Broadcast

Channels, IEEE, July 1994, Pages 2423-2431), hereinafter referred to as Gopal, in view

of Kalkunte et al (US Pub. No. 2003/0118016), hereinafter referred to as Kalkunte.

Gopal teaches all aspects of the claimed invention as set forth in the rejection of

claims 1, 15, 29, and 43 but fails to teach a method further comprising the step of

inserting one or more bits in a frame header of the frame to select appropriate ports in a

switch fabric to transmit the frame.

Kalkunte discloses a method of forwarding data to a specific port in a network

switch.

Kalkunte discloses a method inserting one or more bits in a frame header of the

frame to select appropriate ports in a switch fabric to transmit the frame. **(See**

Paragraphs 11 and 42-46)

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify Gopal's method and apparatus to incorporate the use of

bits in a header frame to specify a switch port, the motivation being increasing the

throughput and operational speed of a network involved in forwarding different types of

data including multicast frames.

6.   **Claims 3, 17, 31 and 45** are rejected under 35 U.S.C. 103(a) as being

unpatentable over Gopal in view of Kalkunte, as applied to claims 2, 16, 30, and 44

above, and further in view of Bennett et al (US 2005/0021832), hereinafter referred to

as Bennett.

The combination of Gopal and Kalkunte teaches all aspects of the claimed

invention as set forth in the rejections of claims 2, 16, 30, and 44 but does not disclose

a method of setting a bit in a frame header to indicate an explicit or implicit

acknowledgment.

Bennett discloses a method where efficient transmission of data through a low

bandwidth link is realized using deferred acknowledgment messages.

Bennett teaches a method further comprising the step of setting a bit in the frame

header of the frame to indicate an explicit or an implicit acknowledgment. **(See**

Paragraphs 10, 47, and 69 and also Figure 5. Bennett like the Applicant, as

indicated in the Specification on Page 16, Lines 11-14 and Page19, Lines 3-5,

refers to implicit acknowledgment to simply not requiring the destination node

that received the transmitted frame to transmit a response acknowledging the

delivery of the frame.)

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify the combination of Gopal's and Kalkunte's method to

incorporate the use of bits in a header frame to specify whether explicit or implicit

acknowledgment is required, the motivation being increasing the throughput by

minimizing the idle time of the communication link in decreasing the amount of

acknowledgment messages sent over the link.

7.   **Claims 4, 5, 9-14, 18, 19, 23-28, 32, 33, 37-42, 46, 47, and 51-54** are rejected

under 35 U.S.C. 103(a) as being unpatentable over Gopal et al (Multicasting to Multiple

Groups Over Broadcast Channels, IEEE, July 1994, Pages 2423-2431), hereinafter

referred to as Gopal, in view of Gopal et al (Point-to-Multipoint Communication Over

Broadcast Links, IEEE, September 1984, Pages 1034-1044), hereinafter referred to as

Gopal'84.

8.   Regarding **claims 4, 18, 32, and 46**, Gopal teaches all aspects of the claimed

invention as set forth in the rejection of claims 1, 15, 29, and 43 but fails to teach a

method further comprising the step of saving a copy of the transmitted frame.

Gopal'84 discloses several reliable protocol for point-to-multipoint

communications over broadcast channels.

Gopal'84 discloses a method further comprising the step of saving a copy of the

transmitted frame. **(See Section C, Last line of 2nd paragraph. See also Figure 4. In**

Gopal'84's system messages 1,2, and 3 are buffered before the timer for message

1 expires at which time message 1 is either retransmitted or dropped.)

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify Gopal's method and apparatus to incorporate the use of

a buffer to save a copy of the transmitted frame, the motivation being increasing the

throughput and operational speed of a network involved in forwarding different types of data including multicast frames.

9.   Regarding **claims 5, 19, 33, and 47**, Gopal teaches all aspects of the claimed invention as set forth in the rejection of claims 1, 15, 29, and 43 but fails to teach a method of receiving an acknowledgment from two or more destination nodes.

Gopal'84 discloses a method further comprising the step of receiving an acknowledgment from two or more destination nodes. **(See Figures 2-4; Acknowledgments are received from nodes A, B and C for messages 1,2 and 3)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Gopal's method and apparatus to incorporate the use of ARQ protocol with the ability to receive acknowledgments from two or more destinations, the motivation being increasing the reliability of a network involved in forwarding different types of data including multicast frames by guaranteeing error free in sequence delivery of frames.

10.   Regarding **claims 9, 23, 37, and 51**, Gopal teaches all aspects of the claimed invention as set forth in the rejection of claims 5, 19, 33, and 47 but fails to teach a method further comprising the steps of: identifying the particular destination node; identifying a frame associated with the acknowledgment; reading a data structure associated with the frame associated with the acknowledgment; and indicating in an entry in the data structure associated with the particular destination node that a frame associated with the acknowledgment from the particular destination node has been received.

Gopal'84 discloses a method comprising the steps of: identifying the particular

destination node **(See Figure 5, box containing "J- Identity of Receiver Sending**

Ack"); identifying a frame associated with the acknowledgment **(See Figure 5, box**

containing "L – Sequence of messages being Acknowledged); reading a data

structure associated with the frame associated with the acknowledgment **(See Figure 5,**

element containing "Is Acknowledgment Error Free"); and indicating in an entry in

the data structure associated with the particular destination node that a frame

associated with the acknowledgment from the particular destination node has been

received**(i.e. Gopal'84 indicates in the message data structure the receipt of an**

acknowledgment from a receiver and to one having ordinary skill in the art this

limitation that uses destination node data structure is an obvious variation of

Gopal'84's disclosure of using message data structure . See Figure 5 and Section

3 on Page 1036).

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify Gopal's method and apparatus to incorporate the use of

ARQ protocol with the ability to receive acknowledgments and read the data structures

of the Ack messages, the motivation being increasing the reliability of a network

involved in forwarding different types of data including multicast frames by guaranteeing

error free in sequence delivery of frames.

11.   Regarding **claims 10, 24, 38, and 52**, Gopal teaches all aspects of the claimed

invention as set forth in the rejection of claims 9, 23, 37, and 51 but fails to teach a

method further comprising the step of determining if there are outstanding responses for the frame associated with the acknowledgment.

Gopal'84 discloses a method further comprising the step of determining if there are outstanding responses for the frame associated with the acknowledgment. **(See Figure 5, element containing "Is ACK_OUTSTANDING List of messages Empty?")**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Gopal's method and apparatus to incorporate the use of ARQ protocol with a feature to check if there are outstanding responses for the frame associated with the acknowledgment, the motivation being increasing the reliability of a network involved in forwarding different types of data including multicast frames by guaranteeing error free in sequence delivery of frames.

12.   Regarding **claims 11, 25, 39, and 53**, Gopal teaches all aspects of the claimed invention as set forth in the rejection of claims 10, 24, 38, and 52 but fails to teach a method wherein if there are outstanding responses for the frame associated with the acknowledgment then the method further comprises the step of: waiting to receive an additional acknowledgment.

Gopal'84 discloses wherein if there are outstanding responses for the frame associated with the acknowledgment then the method further comprises the step of: waiting to receive an additional acknowledgment. **(See Figure 5)**

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Gopal's method and apparatus to incorporate the use of ARQ protocol with a feature to receive additional acknowledgments when there are

outstanding responses, the motivation being increasing the reliability of a network

involved in forwarding different types of data including multicast frames by guaranteeing

error free in sequence delivery of frames.

13.   Regarding **claims 12, 26, 40, and 54**, Gopal teaches all aspects of the claimed

invention as set forth in the rejection of claims 10, 24, 38, and 52 but fails to teach a

method wherein if there are no outstanding responses for the frame then the method

further comprises the step of releasing memory associated with the frame associated

with the acknowledgment.

        Gopal'84 teaches a method wherein if there are no outstanding responses for the

frame then the method further comprises the step of releasing memory associated with

the frame associated with the acknowledgment. **(See Figure 5 and Section C, 2nd**

Paragraph; The sole purpose of the buffer is to store data to be retransmitted and

if the frame is not to be retransmitted as determined by the received ack message

and the empty outstanding response list then the memory has to be released.)

        It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify Gopal's method and apparatus to incorporate the use of

ARQ protocol with a step of releasing memory associated with the frame associated

with the acknowledgment at the appropriate time, the motivation being increasing the

reliability of a network involved in forwarding different types of data including multicast

frames by guaranteeing error free in sequence delivery of frames.

14.   Regarding **claims 13, 14, 27, 28, 41, and 42**, Gopal teaches all aspects of the

claimed invention as set forth in the rejection of claims 1, 15, 29, and 43 but fails to

teach a method of receiving a request to retransmit the frame from a particular

destination node of the two or more destination nodes; and retransmitting the frame to

the particular destination node of the two or more destination nodes and the frame is a

multicast frame.

Gopal'84 discloses a method of receiving a request to retransmit the frame from

a particular destination node of the two or more destination nodes; and retransmitting

the frame to the particular destination node of the two or more destination nodes and

the frame is a multicast frame. **(See Figure 5. The lack of sending an Ack message**

by the receiver can be interpreted as a request for re-transmit. All frames in

Gopal'84's system are multicast frames.)

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify Gopal's method and apparatus to incorporate the use of

ARQ protocol with a method of receiving request to retransmit frames, the motivation

being increasing the reliability of a network involved in forwarding different types of data

including multicast frames by guaranteeing error free in sequence delivery of frames.

15.   **Claims 6, 7, 20, 21, 34, 35, 48, and 49** are rejected under 35 U.S.C. 103(a) as

being unpatentable over Gopal et al (Multicasting to Multiple Groups Over Broadcast

Channels, IEEE, July 1994, Pages 2423-2431), hereinafter referred to as Gopal, in view

of Gopal et al (Point-to-Multipoint Communication Over Broadcast Links, IEEE,

September 1984, Pages 1034-1044), hereinafter referred to as Gopal'84, and Kawan et

al (US 5, 572, 572), hereinafter referred to as Kawan.

16.   **Regarding claims 6, 20, 34, and 48**, Gopal teaches all aspects of the claimed

invention as set forth in the rejection of claims 1, 15, 29, and 43 but fails to teach a

method further comprising the step of identifying particular destination node; identifying

a frame associated with the acknowledgment; reading a data structure associated with

the particular destination node.

Gopal'84 teaches a method that includes the steps of identifying particular

destination node (**See Gopal'84, Figure 5, box containing "J- Identity of Receiver**

Sending Ack"); identifying a frame associated with the acknowledgment **(See**

Gopal'84, Figure 5, box containing "L – Sequence of messages being

Acknowledged); reading a data structure associated with the particular destination

node **(See Figure 5; Gopal'84 discloses a data structure associated with every**

message L and to one ordinarily skilled in the art this limitation is an obvious

variation of Gopal'84's disclosure)

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify Gopal's method and apparatus to incorporate the use of

ARQ protocol with the ability to identify a destination node and associate received

acknowledgment with the identified destination node, the motivation being increasing

the reliability of a network involved in forwarding different types of data including

multicast frames by guaranteeing error free in sequence delivery of frames.

Gopal further fails to disclose a method of determining if a sequence number

associated with the acknowledgment is greater than an expected sequence number.

Kawan discloses an apparatus that is configured both as a telephone and a

computer and uses ARQ protocol in communicating to the network.

Kawan teaches a method of determining if a sequence number associated with

the acknowledgment is greater than an expected sequence number. **(i.e. Kawan**

discloses if the transmitting device has stored one or more messages with higher

sequence numbers than that of the last received acknowledgment then those

messages with greater sequence number are retransmitted. Therefore Kawan

teaches sequence number manipulation with the goal of re-transmitting data

whenever acknowledgments are not received including cases of "lost Acks" (See

Column 21, Lines 7-21))

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify Gopal's method and apparatus to incorporate the use of

ARQ protocol with the ability to check sequence numbers received are greater than an

expected sequence number, the motivation being increasing the reliability of a network

involved in forwarding different types of data including multicast frames by guaranteeing

error free in sequence delivery of frames.

17.   Regarding **claims 7, 21, 35, and 49**, Gopal teaches all aspects of the claimed

invention as set forth in the rejections of claims 1, 15, 29, and 43 but does not disclose

a method wherein if the sequence number associated with the acknowledgment is

greater than the expected sequence number then the method further comprises the

step of detecting a lost acknowledgment.

Kawan teaches a method wherein if the sequence number associated with the
acknowledgment is greater than the expected sequence number then the method
further comprises the step of detecting a lost acknowledgment. **(Kawan detects lost
acknowledgment and accounts the cases when the received sequence number is
greater than or less than or equal to the expected sequence number. See Column
21, Lines 7-21)**

It would have been obvious to one having ordinary skill in the art at the time the
invention was made to modify the combination of Gopal's and Gopal'84's method and
apparatus to incorporate the use of ARQ protocol with the ability to check sequence
numbers received are greater than an expected sequence number, the motivation being
increasing the reliability of a network involved in forwarding different types of data
including multicast frames by guaranteeing error free in sequence delivery of frames.

18.   **Claims 8, 22, 36 and 50** are rejected under 35 U.S.C. 103(a) as being
unpatentable over Gopal et al (Multicasting to Multiple Groups Over Broadcast
Channels, IEEE, July 1994, Pages 2423-2431), hereinafter referred to as Gopal, in view
of Gopal et al (Point-to-Multipoint Communication Over Broadcast Links, IEEE,
September 1984, Pages 1034-1044), hereinafter referred to as Gopal'84, and Bennett
et al (US 2005/0021832), hereinafter referred to as Bennett.

Gopal teaches all aspects of the claimed invention as set forth in the rejection of
claims 1, 15, 29, and 43 but fails to teach a method further comprising the step of
identifying particular destination node; identifying a frame associated with the

acknowledgment; reading a data structure associated with the particular destination

node.

Gopal'84 teaches a method that includes the steps of identifying particular

destination node **(See Gopal'84, Figure 5, box containing "J- Identity of Receiver**

Sending Ack"); identifying a frame associated with the acknowledgment **(See**

Gopal'84, Figure 5, box containing "L – Sequence of messages being

Acknowledged); reading a data structure associated with the particular destination

node **(i.e. Gopal'84 in Figure 5 indicates by reading the message data structure**

the receipt of an acknowledgment from a receiver and to one having ordinary skill

in the art this limitation that uses destination node data structure is an obvious

variation of Gopal'84's disclosure of using message data structure . See Figure 5

and Section 3 on Page 1036); indicating in an entry in the data structure associated

with the particular destination node that a frame associated with the acknowledgment

from the particular destination node has been received; **(i.e. Gopal'84 indicates in the**

message data structure the receipt of an acknowledgment from a receiver and

this limitation that replaces the message data structure with a destination node

data structure is an obvious variation of Gopal'84's disclosure. See Figure 5 and

Section 3 on Page 1036)

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify Gopal's method and apparatus to incorporate the use of

ARQ protocol with the ability to identify a destination node and associate received

acknowledgment with the identified destination node, the motivation being increasing

the reliability of a network involved in forwarding different types of data including

multicast frames by guaranteeing error free in sequence delivery of frames.

Gopal further fails to disclose a method of identifying a previous entry associated

with a frame transmitted with an implicit acknowledgment as having been received.

Bennett discloses a method of identifying a previous entry associated with a

frame transmitted with an implicit acknowledgment as having been received. **(See**

Paragraphs 10, 47, and 69 and also Figure 5.)

It would have been obvious to one having ordinary skill in the art at the time the

invention was made to modify of Gopal's method to incorporate the use of identifying a

previous entry associated with a frame transmitted with an implicit acknowledgment as

having been received, the motivation being increasing the throughput by minimizing the

idle time of the communication link in decreasing the amount of acknowledgment

messages sent over the link.

Conclusion

The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

The following US Patent Application Publication and US Patent are cited to show

the state of the art with respect to Limited ARQ and buffer management in ARQ

Protocol:

US Pub. No. (2002/0034182) to Mallory

US (4654654) to Buttler et al

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Habte Mered whose telephone number is 571 272 6046.

The examiner can normally be reached on Monday to Friday 9:30AM to 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Hassan Kizou can be reached on 571 272 3088. The fax phone number for

the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free).

HM
07-15-2005

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